

Commonwealth of Kentucky
Division for Air Quality
PERMIT STATEMENT OF BASIS

CONDITIONAL MAJOR (DRAFT PERMIT) No. F-05-031

AGC AUTOMOTIVE AMERICAS CO.

ELIZABETHTOWN KY.

JULY 21, 2005

BRIAN BALLARD, REVIEWER

SOURCE I.D. #: 021-093-00090

SOURCE A.I. #: 1646

ACTIVITY #: APE20050002

SOURCE DESCRIPTION:

AGC Automotive Americas Co. is an auto glass manufacturing facility in Elizabethtown, Kentucky. The facility purchases glass, which is then cut and ground to specifications. The facility currently has four (4) laminating lines and seven (7) tempering lines. The issuance of permit F-05-031 will authorize the construction and operation of two (2) additional tempering lines. Front windshields are processed in the laminating lines. Glass is laminated and a decorative glass coating is applied around the outer edge of the windshield. Side and rear windows are processed in the tempering lines. Glass is tempered and coated with a decorative glass coating, some of which is used on the rear windows for installation of defogging systems. After coating, the windows and windshields are immediately dried in electric print dryers, and then formed into final shape in natural gas-fired or electric ovens. Cleanup for the coating operations at the plant is performed using a butyl acetate solvent.

COMMENTS:

Toxic emissions from the source are modeled using SCREEN3. Since the source has multiple nearby stacks, a merged stack analysis is used to evaluate the impact of toxic emissions. This is done by merging the emissions into a single representative stack. The parameters (height, diameter, flow rate and temperature) of the representative stack are determined using the following equation:

$$S_w = \sum_{i=1}^n \left(\frac{m_i}{m_T} (S_i) \right)$$

Where S_w = weighted stack parameter

n = the number of stacks

m_i = mass flow rate from stack i

m_T = total mass flow rate from all stacks

S_i = individual stack parameter

Since E75-1 and E75-2 are not constructed, the stack parameters for these emission sources are assumed to be identical to the existing tempering lines, ETP-3, ETP-4 and ETP-5. A review of the MSDS's contained in the application identified 2(2-Butoxyethoxy) ethanol a.k.a Diethylene Glycol Monobutyl Ether (CAS No. 112-34-5) as the only toxic emitted. The toxic is present in coating 2L54M150A, among others. The mass emission rate used in the model was 9.253 lb/hour (1.166 g/s). This equates to an annual emission rate of 40.53 tons/year. The mass rate is assumed to be entirely Diethylene Glycol Monobutyl Ether, since the application does not clarify mass emission rates of specific glycol ethers.

COMMENTS (CONTINUED):

The maximum annual concentration determined by the model occurs at the property boundary (1,000 feet (305 meters) from the “representative stack”) and is $187.8 \mu\text{g}/\text{m}^3$. This concentration is compared to the prioritized chronic dose response values (PRDV) located at <http://www.epa.gov/ttn/atw/toxsource/table1.pdf>. These are the health-based standards recommended by the EPA, Office of Air Quality Planning and Standards (OAQPS). The recommended PRDV for diethylene glycol monobutyl ether is $20 \mu\text{g}/\text{m}^3$. The acceptable “target risk” for noncancer endpoints is a hazard index of 1 or less, where hazard index is defined as:

$$\text{Hazard Index} = \frac{\text{Modeled Concentration of } X}{\text{Concentration of } X \text{ in Table}}$$

The hazard index based on potential to emit for Diethylene Glycol Monobutyl Ether is calculated to be 9.39.

This source will be limited to emitting 9.0 tons per year of any single HAP. If the source emitted 9.0 tons/year of diethylene glycol monobutyl ether, the hazard index would be $41.7/20$ or 2.09. The allowable emission rate of diethylene glycol monobutyl ether that results in a hazard index of 1 is 4.32 tons/year.

VOC and HAP emissions from the laminating and tempering lines are calculated by a material balance with emission factors provided in the permit application. Emissions factors for natural gas combustion are referenced from AP-42, Table 1.4-1 and 1.4-2 for boilers. Emission factors for natural gas combustion in ovens are referenced from EPA’s Factor Information Retrieval System (FIRE) for particulate matter.

EMISSION AND OPERATING CAPS DESCRIPTION:

The source has requested federally enforceable emission caps to preclude major source status. The source will be subject to an emission cap of 90.0 tons/year of VOC per rolling twelve (12) month average, 9.0 tons/year of single HAP per rolling twelve (12) month average and 22.5 tons/year of combined HAP per rolling twelve (12) month average. Additionally this source will be subject to an emission cap of 4.32 tons/year of diethylene glycol monobutyl ether (CAS No. 112-34-5).

PERIODIC MONITORING:

The permittee shall maintain monthly records of the purchase and usage of inks, cleanup solvent or any VOC/HAP containing material. Monthly monitoring of the volume of natural gas burned shall be required.

CREDIBLE EVIDENCE:

This permit contains provisions which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has not incorporated these provisions in its air quality regulations.